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December 15, 1951

SCIENCE NEWS LETTER

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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Christmas Spruce

See Page 378

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TECHNOLOGY DEPT.

MEDICINE

Stop Blood Plasma Jaundice

Hope is seen that danger of jaundice from blood plasma transfusions can be averted by high intensity electron treatment of the plasma.

► HOPE OF stopping the danger of a patient getting a serious jaundice sickness with a transfusion of blood plasma appears in a report to the New York Academy of Sciences.

The sickness, known as homologous serum jaundice, is caused by a virus which gets into the blood. Reports of a number of cases of this sickness following transfusions with plasma that has been sterilized by ultraviolet rays have been causing much concern in medical circles in recent years.

High intensity electron treatment of the plasma in the frozen state may be the answer to this pressing problem. Such treatment can actually kill viruses in blood plasma, Dr. Wolfgang Huber of Electronized Chemicals Corporation, Brooklyn, N. Y., reported.

The dosages necessary, he found in his experiments, increase roughly with the decrease in the size of the virus. For the Lansing strain of poliomyelitis virus, for example, a dose of 1,500,000 rep is needed to inactivate the virus completely in blood

plasma. Rep, meaning roentgen equivalent physical, is the term used for the actual dose of electrons absorbed in tissue of a specific kind.

A dose of 1,000,000 rep, which Dr. Huber reported killed nerve-attacking viruses when put into blood plasma, is a very big dose, about 1,000 times the lethal dose for any living thing.

By proper selection of conditions during irradiation with such high doses of high intensity electrons, the damage to the plasma and its essential components can be considerably reduced or eliminated, Dr. Huber said.

The high biological efficiency of electrons, he pointed out, makes it possible to use them for sterilizing plasma at very reasonable cost levels.

Dr. Huber emphasized, however, that the results so far "show nothing more than the possibility of a promising new method for the elimination of the virus of homologous serum jaundice from plasma and other blood fractions."

Science News Letter, December 15, 1951

PSYCHOLOGY

Kinsey Reports Confuse

► KINSEY REPORTS on sex are likely to make nervous women more nervous and confused over sex, in the opinion of Dr. Earl O. G. Schmitt of San Jose, Calif.

"It is surprising what a large percentage of women are unhappy and worried about matters of sex," he stated in a report to the American Medical Association meeting in Los Angeles.

"I doubt very much that mass surveys such as the Kinsey reports, although possibly well intentioned, will do much constructively in leading the worrisome nervous woman out of her confused state concerning matters of sex.

"On the contrary, such reports, I fear, may have a very damaging effect on the proper understanding of sex problems and on the dignity of sex in the lives of many otherwise sane-minded women."

The present day nervous woman, he said, presents certain problems which are, in part at least, products of our machine age and speed.

She is "a scared and lonely individual in need of a friend, and looks to her doctor more often for friendship than for professional skill and service," Dr. Schmitt said.

Many such women have never learned how to get along with disappointment. Most nervous breakdowns, Dr. Schmitt said, are the result of inability to adjust to disappointment or frustration.

An interest in the domestic arts and work, sometimes part-time work such as telephone solicitation, will help many nervous women.

Dr. Schmitt gave as his firm conviction that "more nervous women are created over the bridge table than over the wash tub."

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PHYSICS

Subatomic V-Particles Are Detected Daily

► TWO PHOTOGRAPHS daily are being obtained atop Mt. Wilson, Calif., of the most elusive subatomic particles, named V from the shape of their tracks.

Dr. C. D. Anderson, California Institute of Technology Nobel prize physicist, reported to the American Physical Society meeting in Houston, Tex., that experiments with his cloud chambers bombarded by cosmic rays are producing repeated evidence of V-

particles of which only 36 cases were observed prior to this year.

V-particles are produced when a proton or neutron traveling at very high speed strikes the nucleus of an atom. So far cosmic ray particles alone have sufficient speed to produce them. V-particles occur both as neutral particles and charged. They live for only about one ten billionth of a second and then spontaneously decay. Two types of decay of the neutral V-particles have been observed, one resulting in what is called a pi meson and a proton or hydrogen atomic nucleus, the second resulting in two pi mesons.

The California Institute of Technology work is being done under the direction of Profs. R. B. Leighton and E. W. Cowan as well as Dr. Anderson. These three physicists, together with Drs. A. J. Seriff and C. Hsiao, found 34 V-particles in cosmic ray experiments in 1950 on White Mountain, Calif., at 10,500 feet elevation. They then confirmed the discovery of the V-particles by Drs. G. D. Rochester and C. C. Butler of Manchester University, England, who in 1947 observed two examples.

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RADIO

Radar Screens Could Block Out Still Targets

► RADAR SCREENS which pick up only fast moving planes and cut out both the fixed targets in the surrounding countryside and the strips of tinfoil dropped to confuse are now possible.

Such radar, which would make identification of enemy aircraft approaching our shores much easier, depends on the Doppler effect. This is best illustrated by the change in pitch heard from a moving train whistle. Similarly, the frequency of the echo of the radio waves from a moving target will change, while those from fixed targets or relatively slow moving strips of tinfoil do not change.

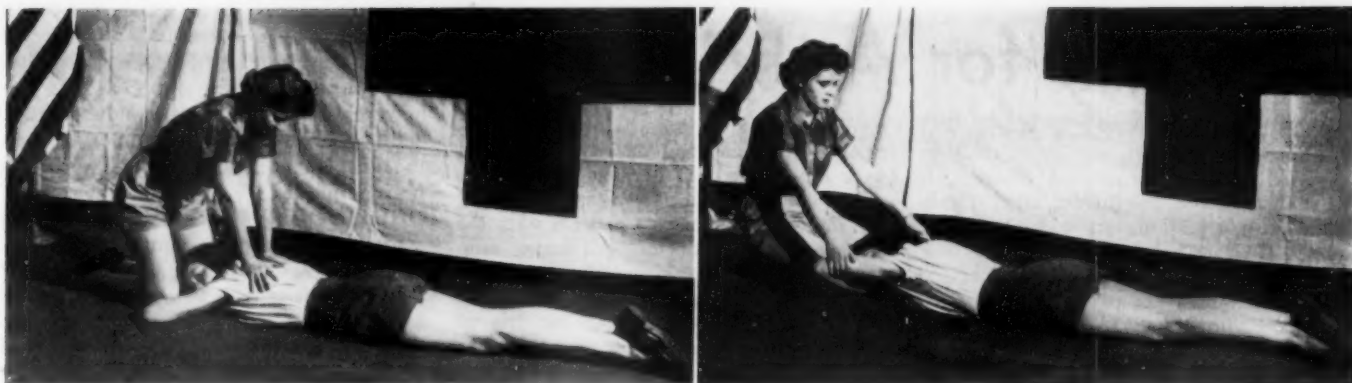
Research was begun on methods to accomplish this during World War II, with the Germans being early explorers in the field. Crude models have already been constructed.

Taking advantage of the Doppler effect, according to Lt. Col. L. M. Orman writing in the *ANTI-AIRCRAFT JOURNAL* (Nov.-Dec.), requires changing the electronic signals bounced back from the targets into sound signals. These sound signals are then put through a circuit which adds an interval of delay to them.

Lt. Col. Orman, together with Capt. L. G. Callahan, Jr., found that barium titanate was the best material for such a delay line.

Once the "clutter" from fixed targets and enemy attempts at jamming are out of the way, Col. Orman says, scientists and engineers can start work on designing a radar scope which picks up only enemy planes.

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ARTIFICIAL RESPIRATION—These pictures show the two positions used in the back-pressure arm-lift method of giving artificial respiration, just approved for official public use. The left photograph illustrates air being forced out of a victim's lungs, while the right one shows the position for forcing air into the lungs.

PUBLIC HEALTH

New Respiration Method

Artificial respiration by the back-pressure arm-lift method now approved. Gives twice the lung ventilation of the Schafer method.

► A NEW and better way of giving artificial respiration to save the life of a person whose breathing has been stopped by drowning, gas, electric shock or suffocation has now been approved by the Department of Defense, the American National Red Cross, the National Research Council and the U. S. Public Health Service.

It is called the back-pressure arm-lift method. It replaces in Red Cross and other first aid teaching the Schafer prone-pressure method which first aiders have been taught for many years. Reason for the change is that this new method gives twice the ventilation of the lungs as the Schafer method. Other methods more effective than the Schafer have also been developed, but they are harder to learn and require more strength to perform.

The back-pressure arm-lift method was developed by Holger Nielsen of Denmark and has been used successfully for two decades in the Scandinavian countries.

As in all attempts to save the life of a person whose breathing has stopped, time is of utmost importance. Seconds count, so start at once without waiting to move the victim, loosen clothing or anything else.

Here are the directions for the new life-saving method:

1. Place the subject in the face down, prone position. Bend his elbows and place the hands one upon the other. Turn his face to one side, placing the cheek upon his hand.

2. Kneel on either the right or left knee, at the head of the subject, facing him. Place the knee at the side of the subject's head close to the forearm. Place the opposite foot near the elbow. If it is more comfortable,

kneel on both knees, one on either side of the subject's head. Place your hands upon the flat of the subject's back in such a way that the heels of the hands lie just below a line running between the arm pits. With the tips of the thumbs just touching, spread the fingers downward and outward.

3. Rock forward until the arms are approximately vertical and allow the weight of the upper part of your body to exert slow, steady, even pressure downward upon the hands. This forces air out of the lungs. Your elbows should be kept straight and the pressure exerted almost directly downward on the back.

4. Release the pressure, avoiding a final thrust, and commence to rock slowly backward. Place your hands upon the subject's arms just above his elbows, and draw his arms upward and toward you. Apply just enough lift to feel resistance and tension at the subject's shoulders. Do not bend your elbows, and as you rock backward the subject's arms will be drawn towards you. Then drop the arms gently to the ground. This completes the full cycle. The arm-lift expands the chest by pulling on the chest muscles, arching the back, and relieving the weight on the chest.

The cycle should be repeated 12 times per minute at a steady, uniform rate. The compression and expansion phases should occupy about equal time, the release periods being of minimum duration.

It is all-important that artificial respiration, when needed, be started quickly. There should be a slight inclination of the body in such a way that fluid drains better from the respiratory passage.

The head of the subject should be ex-

tended, not flexed forward, and the chin should not sag lest obstruction of the respiratory passages occur. A check should be made to make sure that the tongue or foreign objects are not obstructing the passages.

These aspects can be cared for when placing the subject into position or shortly thereafter, between cycles. A smooth rhythm in performing artificial respiration is desirable, but split-second timing is not essential.

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MEDICINE

War, Plasma, Drugs Blamed For Cirrhosis Increase

► WORLD WAR II, increased numbers of blood plasma transfusions and some of the modern disease remedies from sulfa drugs to aureomycin were blamed as perhaps responsible for an increase in cases of cirrhosis of the liver.

The increase in this disease and these various possible causes for the increase were reported by Dr. Sidney A. Portis of the University of Illinois College of Medicine, Chicago, at the meeting of the American Medical Association in Los Angeles.

In the past cirrhosis of the liver has mostly been associated with alcoholism, malnutrition, inflammation of the gallbladder and gallstones.

The widespread prevalence of infectious inflammation of the liver during World War II, Dr. Portis said, produced sporadic inoculation of persons never before exposed to the virus of this disease. Many medical men, he pointed out, hold there is a relationship between that disease and cirrhosis of the liver.

Sulfa drugs, aureomycin and some other drugs, he said, have caused disturbance of liver function in some cases. He ascribed other cases of cirrhosis to blood banks and the use of plasma that had not been irradiated to destroy the virus of the infectious liver inflammation.

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MEDICINE

War Gas for Arthritis

► **NITROGEN MUSTARD**, World War II poison gas chemical, may prove effective as a remedy for rheumatoid arthritis. It may also become helpful for other conditions, such as asthma, in which cortisone and ACTH are helpful.

Good results with the use of this chemical in a small number of patients are reported by Drs. C. Jimenez Diaz, E. Lopez Garcia, A. Merchante and J. Perianes of the Medical Clinic and Institute for Medical Research, Madrid University, Spain, in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (Dec. 8).

Of the nine arthritis patients treated, "five improved extraordinarily," the Spanish doctors report. "Complete disappearance of the pain and swelling of the joints and recovery of normal movement" occurred in these.

In three other patients the improvement is termed "considerable, even though not so complete." In two of these patients per-

manent joint changes and irreversible muscular contractions had already set in and were not affected by the nitrogen mustard.

The breathing difficulty disappeared after the first injection in two patients with the asthma condition doctors call status asthmaticus. Reason for trying nitrogen mustard injections in these patients was the fact that they produce effects similar to that of cortisone on white blood cells, causing a progressive decrease in certain of them.

The Spanish doctors have not yet had an opportunity to use cortisone for treatment of arthritis patients, so are not able to say how the two treatments compare. They point out that the number of patients reported on is small. They are continuing the treatment on more patients. Meanwhile they feel their results are good enough to draw the attention of other doctors to this possible help for arthritis patients.

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ENTOMOLOGY

Elm Scale Controlled

► **FIRST SUCCESSFUL** introduction of insect parasites of European elm scale in the United States has been announced by the division of biological control of the University of California Agricultural Experiment Station, Riverside.

Dr. S. E. Flanders disclosed that a small parasitic wasp introduced from France and reared in the Riverside station insectary was released in three California cities, Sacramento, Pasadena and Redlands, in 1949 and 1950. The wasp this year has practically cleaned up the elm scale on trees in Redlands.

European elm scale has been a serious pest throughout the nation for many years. Unless trees are given costly annual treatment with chemical sprays, they become unsightly. Scale insects, sucking sap from the tree, excrete a honey-like fluid and create a condition right for a black fungus.

Elm scale parasites were introduced into the United States from Germany in 1908 and from France in 1934, but were not successful. In 1949, however, several hundred specimens were obtained from H. L. Parker, in charge of the U. S. Department of Agriculture parasite laboratory in France.

A pair of elm trees which had never been sprayed was found in Redlands. The first two years, Dr. Flanders said, little effect on the scale was apparent. This year, however, he reports the parasite established and working. The trees are free of scale, though others several blocks away are heavily infested.

This is the only instance of biological control of European elm scale in this country.

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Question Box

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GENETICS

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GENERAL SCIENCE

How can you help to save our native wild holly? p. 378.

GEOLOGY

How many active volcanoes are constantly threatening eruption? p. 373.

Photographs: Cover, p. 371, 378 and 379, Fremont Davis; p. 373, Battelle Memorial Institute; p. 375, U. S. Army.

MEDICINE

What disaster treatment for burns has been recommended? p. 377.

What method can be used to keep alive a patient whose heart has stopped on the operating table? p. 379.

NUTRITION

How was the existence of an unknown nutritional factor in butter and oleo discovered? p. 374.

PHYSICS

For how long does the shortest-lived subatomic particle yet discovered live? p. 374.

GEOLOGY

Volcanoes Constant Threat

World has 450 active volcanoes, each of which is as potentially destructive as Hibok Hibok that erupted on the Philippines' Camiguin Island.

► ABOUT 450 active volcanoes exist in the world today and any one of them can potentially perform destructively as has Hibok Hibok volcano on the Philippines' Camiguin island.

People who live in the vicinity of volcanoes known to be active in historic times often spend lifetimes of fear that the earth around them will let forth death and ruin.

Many years often pass without an eruption or any real sign of activity. Then suddenly the pent-up forces within the earth may break loose.

To geologists volcanoes are a surface phenomenon, even though they erupt with tremendous violence. The origin of their heat and energy is at most 25 to 30 miles below the surface of the earth, and many experts think that the changes in rock structure that give rise to the activity are much closer to the surface.

If the modern superlative for big explosions is the atomic bomb, the volcano is a super-superlative. A volcano lets loose with far more energy than anything man can set off. Even a small volcano like Paricutin in Mexico, closest active volcano to the United States, has the energy of many atomic bombs, and it keeps at it day and night, with repeated eruptions.

A great explosive eruption, like that of Krakatoa in 1883, throws many tons of dust into the air. That outburst actually caused red sunsets for two years all over the world due to the dust in the atmosphere. There is thus the possibility that volcanoes, in addition to causing destruction in their eruption, will actually affect the weather of the whole earth.

Both steam and molten rock enter into most volcanic eruptions. One theory is that relatively close to the earth's surface, compared with the diameter of the earth itself, pressures keep basaltic rocks molten. They rise to the surface as the earth's crust adjusts, perhaps taking many years to travel the score of miles upward, penetrating through breaks in the crustal layers. Finally they may break out in a blister that is the volcano, spreading lava over the surface.

Chemical changes in the rocks, crystallization and radioactivity have been called upon to explain how heat and molten matter can occur even nearer the surface to cause volcanoes. Steam, which is water heated highly, can cause great explosive forces, such as accompany eruptions. The water may be remnants of the original material of the earth or surface water that has found its way into the depths of the earth.

An old volcano that explodes anew is likely to be a cinder cone built by a previous eruption. The old vent is a chimney of hardened lava, which is plugged up. Liquid lava bubbles up, generating gas, which creates the explosion.

Hibok Hibok volcano seems to be an old cinder cone that blew up in some such way. Later investigations will show just what happened and what is likely to happen in the future.

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PUBLIC HEALTH

Difference Between Man And Worm Hint to Control

► TWO POINTS in the complex chemical process by which the trichinella tapeworm differs from its host may pave the way toward controlling trichinosis, the disease you get from eating improperly cooked pork.

Dr. Clark P. Read, zoologist at the University of California at Los Angeles, has found these two vulnerable points in both

the trichinella tapeworm and the rat tapeworm. In his experiments he was searching for a way in which the energy-building activities of the tapeworms differed from those of the animals they lived in. Two such points were found at which the parasite could be attacked without injuring the host.

Experimentally, the parasites appeared to be conquered when attacked at these two points, said Dr. Read who termed the outlook for controlling them "very promising."

More than 21,000,000 Americans are said to be suffering from trichinosis. The rat tapeworm is also sometimes found in man.

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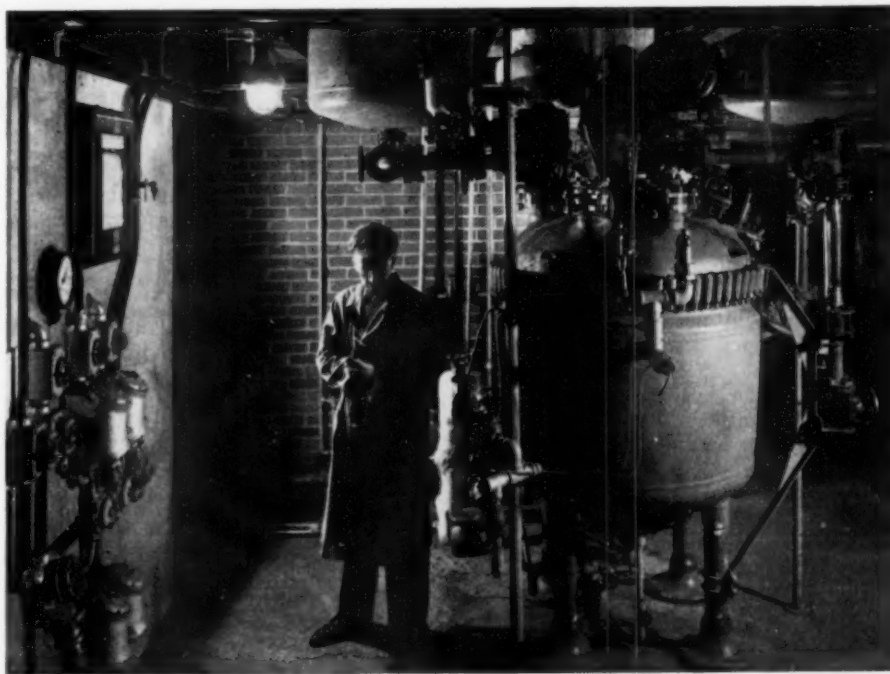
INVENTION

Tinsel-Placing Tool Aids Christmas Tree Trimming

► WITH CHRISTMAS approaching and the tree trimming job ahead, a simple tool to use in placing tinsel on the branches is an invention of interest. It is a time-saving device, but more important it eliminates the need for a stepladder or chair.

This simple tool is made largely of twisted wire, looped at its center with the two ends forming tines like those of a large fork. The loop itself makes a handle. The total length can be as great as desired. In use a number of pieces of tinsel are hung over the two tines which are far enough apart to straddle a twig of the tree. Inventor is Charles L. Poganski, St. Cloud, Minn. Patent 2,577,360 was his award.

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PILOT PLANT—The two-story-high plant at Battelle Memorial Institute is used for evaluating the commercial possibilities of processes for manufacturing organic chemicals.

● RADIO

Saturday, Dec. 22, 1951, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Associate Justice William O. Douglas, honorary national chairman of the Muscular Dystrophy Appeal, will discuss "Muscular Dystrophy."

SURGERY

Operate on Stomach Though Cancer Diagnosis Uncertain

► **WHETHER THE** patient's stomach complaint is diagnosed as gastric or as possible early cancer, an operation to remove the involved part should be considered, Dr. Thomas J. Kennedy of Denver, Colo., declared at the meeting of the Radiological Society of North America in Chicago.

Dr. Kennedy's statement came at the end of a special session on gastritis during which radiologists discussed methods of diagnosing this condition.

Gastritis is an inflammation of the stomach. Dr. Kennedy declared that it is still not possible to tell, either by X-rays or by the gastroscope as used today, the difference between certain inflammatory conditions of the stomach and certain ulcerating or infiltrating types of cancer. He asserted that this differentiation can only be made by microscopic examination of a bit of the stomach tissue.

Early diagnosis of stomach cancer, he pointed out, is a key to improved outlook for cure. Some authorities believe that gastritis is a forerunner of stomach cancer. For these reasons Dr. Kennedy declared a diagnosis of either calls for consideration of surgical removal of the involved portion.

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MEDICINE

Early Lung Cancer Sign Shadow on X-Ray Photo

► **AN EARLY** sign of cancer of the lung which is often overlooked was reported by three Minneapolis doctors at the meeting of the Radiological Society of North America in Chicago.

The sign is an enlargement on one side of the shadow made on X-rays by the hilum of the lung. The hilum is the pit or depression on the surface of the lung where it faces its mate and where the bronchus, blood vessels and nerves enter the lung.

It has been found often both in proved cases of lung cancer after symptoms had developed and in cases seen long before symptoms developed.

Drs. Leo J. Rigler, Bernard J. O'Loughlin and Richard C. Tucker, reporting this early sign of lung cancer, are trying also to establish some exact standards as to the normal size of the hilum shadows of the lung.

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PHYSICS

Shortest-Lived Particle

Find subatomic particle, the neutral meson, that lasts for only a hundred million millionth of a second. Discovered in photographs of cosmic ray events.

► **THE SHORTEST-LIVED** fundamental subatomic particle so far discovered exists for only a hundred million millionths of a second. It is the neutral meson, observed in the tremendous showers of atomic particles that are created high in our atmosphere when a cosmic ray proton particle smashes into an atom.

Dr. Morton F. Kaplon, 30-year-old University of Rochester physicist, and Dr. David M. Ritson, 27-year-old British physicist now a Rochester research associate, reported this discovery to the American Physical Society meeting at Houston, Tex., in describing a new method of capturing cosmic ray events high in the earth's upper atmosphere.

What is called an "emulsion cloud chamber" is sent about 20 miles into the stratosphere attached to free balloons. This little device consists of carefully aligned alternate layers of brass-absorbing material and photographic emulsion that is sensitive to the smashed debris of the atoms.

Photons (gobs of radiation) result from the decay of the short-lived neutral mesons, born of the high energy interactions. Electrons (particles of negative electricity) are produced in showers. These are easily seen in the photographic emulsion and they

lead directly to the high-powered collisions that occur in the brass plates. By measuring the many streaks of speeding particles, the physicists can work out what happened.

The cosmic rays from outer space are immensely more powerful than any radiations produced even in the largest atom-smashing accelerators. Protons (hearts of hydrogen atoms) in the cosmic rays have energies of 5,000 billion electron volts and more. The University of Rochester cyclotron produces 250,000,000 electron volts while the largest atom-smashing machine under construction is the 6 billion electron volt bevatron at the University of California.

Drs. Kaplon and Ritson found that a 5,000 billion electron volt proton in cosmic rays produces an average of 21 charged particles and 12 neutral mesons when it hits the heart of a copper atom in the brass. Measuring the path of the particles allows a determination of their energies and their fleeting lives.

Such cosmic ray researches help work out the structure of both the atoms that make up all matter and what happens in the universe outside the earth where the cosmic rays are created.

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NUTRITION

Seek Unknown Nutrient

► **BOTH BUTTER** and oleo may contain some as yet unidentified substance that is nourishing in addition to their fat, scientists at the U. S. Department of Agriculture report.

Special feeding tests with rats suggest its presence and work to track down the elusive factor is continuing. All rats used in the tests are treated alike except for the form in which they receive the fat making up either 10% or 30% of their diet. The fat is given as butter, butterfat, oleomargarine or oleofat.

The diets presumably contain adequate amounts of all known nutrients, yet baby rats born from mothers raised on the special diets differ in their death rates and in their weights at weaning.

If the mothers were fed either the butterfat or oleofat diet only, their offspring were more apt to die or to weigh less at weaning than rats born of mothers who had always been fed on the butter and oleo diet.

This suggests that both butter and oleo "contain some nutrient or nutritive prop-

erty in their constituents aside from the true fats," the scientists state.

In butter, the nutritive property would be in the milk solids that go along with the fat in the final product. In oleomargarine the unknown nutrient possibly would be in the skim milk or cultured skim milk that is added to the product.

The study is included in the annual report of the Bureau of Dairy Industry.

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INVENTION

Preserve Cottage Cheese By Dehydration Process

► **COTTAGE CHEESE** and other soft cheese can be preserved for long periods by means of a dehydration process which brought Louis Gootgeld, Escondido, Calif., patent 2,576,597. The dehydrated cheese can be rehydrated to yield a product with essentially the same taste as the original.

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MEDICINE

**X-Ray Overdosage
Possible from Diagnosis**

► **THREE X-RAY** diagnostic procedures which may produce overdoses were reported by Drs. Vern W. Ritter, S. Reid Warren, Jr., and Eugene P. Pendergrass of the University of Pennsylvania, Philadelphia, at the meeting of the Radiological Society of North America in Chicago.

The three are: 1. fluoroscopy in which the doctor looks at X-ray shadows of internal organs while the patient is in front of a fluoroscopic screen; 2. dental radiography in which dentists take X-ray pictures of teeth and jaws; and 3. roentgenograms, or X-ray pictures, of the lumbar (lower) spine and pelvic measurements.

Otherwise the X-ray dosages received in diagnostic procedures are small and probably insignificant except in cases of unusual sensitivity, frequently repeated and serial examinations, or when superimposed on doses received for X-ray treatments.

A method for calculating X-ray doses received in diagnostic procedures was worked out for the University of Pennsylvania Hospital. The method can be adapted to other institutions doing X-ray diagnostic work. It is accurate enough, Dr. Ritter and associates believe, to eliminate guesswork in trying to determine if a patient can safely receive further diagnostic X-ray service.

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MENTAL HEALTH

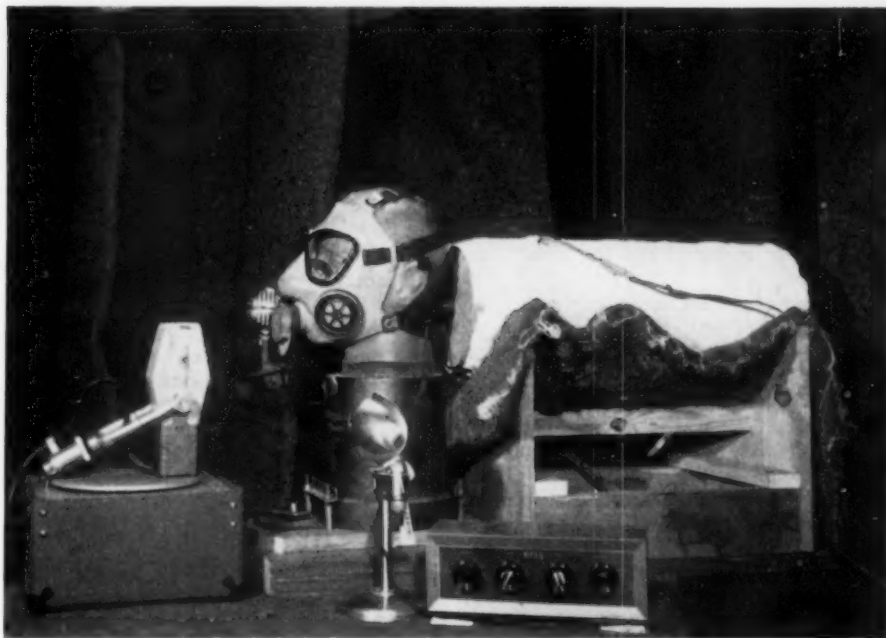
**Attack Mental Health
Problem Along Eight Lines**

► **EIGHT LINES** of attack on one of the world's most pressing health problems, the treatment and prevention of mental illness, were worked on by psychiatrists and social scientists at the Fourth International Congress on Mental Health.

The eight lines along which the scientists hope to better mental health throughout the world are: 1. mental health problems of children from infancy through adolescence; 2. selection of teachers; 3. tensions between workers and management; 4. social security systems and their relation to mental health; 5. mental health problems arising from mass migration; 6. mental health and aging; 7. techniques in treating mental disorders; 8. and mental health and religion.

The World Federation for Mental Health, the organizing body for the international conference, is an international organization with a voluntary non-governmental role in world mental health affairs, with temporary headquarters in London. It serves as a consultative body to two United Nations' organizations, UNESCO and the World Health Organization. Dr. John R. Rees, formerly chief psychiatrist consultant to the British Army, is director of the Federation.

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MASK TEST—Better speaking conditions for persons wearing gas masks is foreseen from experiments of the U. S. Army's Chemical and Radiological Laboratories in echoless room such as shown above.

GENERAL SCIENCE

Candles, Feasts, Evergreens

Over 4,000 years ago, at this time of year, people were celebrating with a mid-winter feast honoring the beginning of the sun's return northward.

► **SOME FOUR** thousand years ago people at this time of year were busy preparing for a holiday feast, readying presents, decorating their homes with green branches, marching in religious processions and lighting candles just as we do today during the Christmas season.

Christmas, at which time Christians celebrate the Nativity, comes on Dec. 25 because ancient pagans had a mid-winter feast honoring the beginning of the sun's return northward. In some of these celebrations also a mother and child were honored.

Even the most orthodox of churchmen now freely state that there is no dependable record of tradition exactly dating the birth of Christ in Bethlehem. The Christmas celebration did not begin until three or four centuries after Christ's time.

Christians made the transition to the new religion easier for pagans in the northern hemisphere by setting the date of the pagan's midwinter feast as the traditional date of Christ's birth.

Centuries before Christ was born many religions celebrated the start of the sun's return from the southern part of the heavens, the promise of longer days and warmer

weather. Some people have thought the Christians invented Christmas to compete against the pagan celebration of Dec. 25.

The worship of the sun with its New Year's celebration sprang up independently in many lands. In Egypt the image of the sun as a new-born child was carried in the midwinter processions. In Mesopotamia the festival, lasting 12 days, was marked by lights and songs. Through the centuries the sun was worshipped in Greece, in Rome and in Europe.

The sun cult was strongly represented during the first Christian centuries by Mithraism, a religion that had its beginnings in Persia. Again, its followers celebrated the sun's return to strength on Dec. 25.

Some of the pagan celebrations included boisterous "hell-raising" more in the nature of our Hallowe'en rowdiness.

Working throughout the centuries, the Christian Church finally has tamed the pagan celebration. Today the merriment, the greenery and the lights, the cards, the gifts and the carols are in honor of the Christ Child. It is the Mother and Babe of Bethlehem who are honored on Dec. 25.

Science News Letter, December 15, 1951

AERONAUTICS

Television Replacing Phone In Air Traffic Control

► TELEVISION IS coming to the aid of the controllers of air traffic at London airport and the general area in a plan soon to be tested. Television equipment will be used to flash messages and maps between ground radar operators and the traffic control officers.

It is expected that these televised messages and maps will help in the task of speeding up air traffic control in this now congested section. The traffic control problem at London airport is becoming increasingly difficult with the increasing traffic and the growing organization now needed to handle it. With jet-powered airliners promised for the near future, the problem will become even more difficult.

For efficiency in directing air traffic, several control stations in the area must keep in almost constant touch with each other. Included in this team is London Radar, which covers the whole area of southern England. Touch is now maintained by telephone. Delays and errors occur because at busy times the line is saturated. The television method is expected to eliminate such delays and errors.

Especially simplified television equipment will be used. The type is known as the Mullard Electronic Telescribe. It has a glass plate at one end on which a message can be placed or written. A simple television apparatus at the other end screens the message which is then flashed across the airport area from one controller to another. The equipment will be able also to pass to the various control centers the information appearing on radar screens in stations in the network.

Science News Letter, December 15, 1951

PHYSICS

Physics Gives Helpful Hints for Homemakers

► MANY HOUSEWIVES would be surprised to learn how much of the science of physics they are using in their daily work around home and kitchen.

Some of the tricks they may have learned from grandmother are applications of physical principles, though grandmother may not have known the physics back of them. And every girl who expects to keep house some day could make things much easier for herself if she takes a physics course in high school, in the opinion of James B. Davis, physics teacher of Ardmore, Pa.

Mr. Davis gives the following "Kitchen Physics" in a bulletin from the Grocery Manufacturers of America:

Eggs: There are times when a homemaker may inadvertently mix some hard-boiled eggs with her fresh eggs. Having been informed in her physics class, she will know that by spinning them she will be

able to separate them. A hard-boiled egg will spin very readily, being one mass, while a fresh egg being of two different liquid masses will hardly spin at all. This is an illustration of inertia.

Cooling: The uninitiated would not know that a saucer of ice placed on top of a pitcher of liquid will cool it in a surprisingly fast time. In convection currents hot air rises, cold air will fall. The old fashioned ice box had the ice placed in the top of the cabinet.

Tea Kettles: A roughened, dark-bottomed tea kettle may not be the pride and joy of an efficient housewife, but it is a better absorber of heat than a bright and shiny one.

Coffee: Coffee can be kept hot without boiling by placing the coffee pot in a container of boiling water. Those who resort to putting the coffee pot over a direct flame are not complimented for their good coffee.

Science News Letter, December 15, 1951

TECHNOLOGY

Underwater Television Aids Or Replaces Human Divers

► WIDER USE of underwater television to aid or replace human divers in exploring a sunken vessel or ocean bottom formation is promised with improved equipment recently revealed by the U. S. Navy Bureau of Ships. This new camera is reported to be far superior to that used in 1947 to evaluate results of the Bikini atom bomb tests.

The new underwater television cameras enable viewers to see under conditions where diver operation is not possible. A broad view of the whole area in which work is being done is provided by a wide angle lens. When desired, a close-up of specific details can be provided simply by closing a switch on shipboard. This changes the camera lens from wide angle to telephoto.

Used with suspended lights, these underwater television cameras enable viewers on shipboard to examine the ocean bottom continuously over long periods of time. The time divers can remain deeply submerged is limited. Pictures appearing on the television screen can be photographed on motion picture film when desired for future study.

Science News Letter, December 15, 1951

INVENTION

Smoking Mixture Has No Tobacco

► THERE IS no tobacco in a smoking mixture on which patent 2,576,021 was issued to Jean U. Koree, New York, but it is claimed as a tobacco substitute with the flavor, aroma and appearance of natural tobacco. It has the burning characteristics of tobacco, and can be made into cigars or cigarettes, or smoked in a pipe.

Science News Letter, December 15, 1951

IN SCIENCE

ACOUSTICS

"Oil Can" Mike Detects Sound Measurements

► A MICROPHONE that resembles a mechanic's oil can, the sound being picked up on what looks like the tip of the spout, will aid physicists in making delicate measurements of sound.

It was built by Dr. Robert W. Leonard of the University of California at Los Angeles, because ordinary microphones were not suitable.

He calls it a "resistively terminated probe microphone" and it is said to be the most "ideal" microphone ever built.

Up until now physicists and radio engineers were on the horns of a dilemma: a large microphone was more efficient and recorded more sensitive measurements, a small microphone was less efficient but did not distort the sound waves like the larger models.

Dr. Leonard has combined the advantages of both types of microphones. The sound is picked up by a tiny condenser microphone at the tip of the "spout." This is connected to an air tube, at the end of which is a sound-absorbing wool material. This eliminates the "bounce" that formerly caused distortion of the sound waves.

Science News Letter, December 15, 1951

CHEMISTRY

Chemical Kills Weed Seeds in Crop Fields

► A CHEMICAL that kills weed seeds as they start to germinate and thus can be used to keep unwanted growths out of plant fields was shown at the Chemical Industries Exposition in New York.

It is a variation of the 2,4-D compounds that have been widely used as weed killers. Its chemical name is sodium 2,4-dichlorophenoxyethyl sulfate. A product of Carbide and Carbon Chemicals Co., it was developed at Boyce Thompson Institute for Plant Research at Yonkers, N. Y., and tested at Seabrook Farms in New Jersey.

The soil activates the chemical upon contact with it and thus it is harmless to foliage at the low concentrations that are applied. It kills or stunts most shallow-planted seeds during germination but usually does not affect deeply planted large seeds or established plants with deep roots. It controls such weeds as chickweed, lamb's quarters, purslane, redroot and carpetweed, and also annual grasses such as crabgrass and fox-tail, affecting them for two to four weeks depending upon the weather.

Science News Letter, December 15, 1951

GENE FIELDS

GENETICS

Head Contour Spots Cattle That Breed Dwarfs

► **HOPE FOR** control of hereditary dwarfism, now causing serious losses in registered and commercial herds of beef cattle, has been found by P. W. Gregory of the University of California's Agricultural Experiment Station at Davis.

A midforehead prominence often shows up in cattle known as "dwarfism carriers." These carriers seem otherwise normal, but often produce dwarfed offspring. When the young carriers are spotted they can be eliminated from the herd before they reach breeding age.

A key to this has been provided by a precision instrument developed by Mr. Gregory which records the exact profile of the head.

After measuring hundreds of head profiles with a precision instrument he developed, Mr. Gregory found the head contours of the carriers are midway between those of deformed dwarfs and normal, non-carrier animals.

Dwarfism is a form of cretinism found in many animals, including man. The dwarfed animal has a broad head, protruding lower jaw, heavy breathing, pot belly, and stunted growth.

In all dwarf cattle studied, the pituitary glands were greatly deficient in the thyrotropic hormone. This hormone stimulates the thyroid gland to secrete another hormone called thyroxin. When thyroxin is deficient the animals are retarded in growth and develop the cretin or dwarf appearance.

Science News Letter, December 15, 1951

MEDICINE

Plastic Head Aids Radiation Therapy

► **AN ANATOMICAL** model of the human head, of natural size and made of translucent plastic, was demonstrated to the Radiological Society of America meeting in Chicago as the latest aid to the study of X-ray treatment of cancer.

Developed at Bellevue Hospital, New York, and constructed and cast by Bakelite Company at its laboratory at Bloomfield, N. J., it is designed as an aid to doctors and medical students in the latest techniques of radiation therapy. It is used to demonstrate how to beam X-rays at internal areas where cancerous growth is most prevalent.

The conception and designing of the head was by Dr. Rieva Rosh, New York University College of Medicine, and Dr. Oscar H. Cohen of Bellevue Hospital. Bakelite

resins were chosen to mold the translucent model because of their dimensional stability, light weight, high refractive index and resistance to impacts, heat and light.

The model is mounted on a revolving base. It is cast in two halves so that internal anatomy can be revealed. Within the plastic head are imbedded battery-operated light bulbs that illuminate principal areas affected by tumors. The aiming of beams of radiation is made easier by the new model.

Science News Letter, December 15, 1951

TECHNOLOGY

Heat-Absorbing Plate Glass Aids Air-Conditioning Units

► **NEW HEAT**-absorbing plate glass for windows, when used with single sheets of the usual quarter-inch thick type, will exclude 61% of the total sun radiation but transmit 71% of average daylight. A combination of two lights with a sealed air-space between will exclude 78% of the solar radiation and transmit 62% of the light.

This new glass has been announced by G. P. MacNichol, Jr., of the Libbey-Owens-Ford Glass Company, Toledo, Ohio. It is particularly suitable for use in large insulating windows in air-conditioned factories, offices and homes. Its use permits smaller air-conditioning units and saves initial cost and operating expense.

Science News Letter, December 15, 1951

GENETICS

Wheat Hybrids Resist Deadly Mosaic Disease

► **THE FIRST** wheat hybrids resistant to the deadly yellow streak mosaic virus have been developed by plant scientists at the U. S. Department of Agriculture.

The hybrids are crosses of wild grasses, often considered as weeds by farmers, and wheat. They are now being tested for commercially valuable properties, such as yields, protein content and resistance to other diseases.

Streak mosaic has cost western farmers hundreds of millions of dollars since it was first identified in 1932. It is estimated that in Kansas alone in 1949, farmers suffered a \$30,000,000 loss due to the disease.

No wheat resistant to streak mosaic has been known previously, but it will require many additional crosses of the hybrids before commercially desirable wheat can be obtained, state H. H. McKinney and W. J. Sando, who developed the mosaic-resistant types. Even though the hybrids were inoculated with the disease twice, five selections of crosses of *Agropyron* wild grass and wheat remained mosaic free, they report in the PLANT DISEASE REPORTER (Nov. 15).

Science News Letter, December 15, 1951

MEDICINE

Expose Burns to Air For Disaster Patients

► **IN THE** event of an atomic bombing disaster, treatment of severe burns by the exposure method in some cases and by pressure dressings in others "could provide a far more practical and satisfactory program for mass treatment than any plan heretofore described."

So Dr. Allyn J. McDowell, plastic surgeon of North Hollywood, Calif., declared at the meeting of the American Medical Association in Los Angeles.

The exposure method consists of immobilizing the burned parts of the body with constant exposure to room air. In addition, whenever possible the burned parts are elevated to combat swelling. No dressings or medications are put on the burn at any time. This method was tried and abandoned earlier in the century. A revival of it, with some changes, has been used with great success during the last two years, Dr. McDowell stated.

He stressed that the exposure method should not be considered a revolutionary method to supplant all previous methods. It should not be considered a routine method of treating all burns, he added. Saving in supplies, anesthesia, personnel and work, and reduced need for skin grafting later are its advantages.

Pressure dressings consist of layers of fine mesh gauze, a filling of resilient bulk or waste and an outer wrapping of non-elastic gauze, roller gauze bandage and adhesive tape. They are put on, Dr. McDowell said, after dead and loose tissue has been removed, the healed or unburned area cleansed with soap and a medication such as plain petroleum jelly has been put on the burn or wound. The dressings are changed every one to three days.

Pressure dressings not only create effective, evenly distributed pressure but also immobilize and splint the burned part.

Science News Letter, December 15, 1951

INVENTION

Make Briquettes from Fine Coal Dust Waste

► **LEWIS A. Tarpley** and Clarence H. Fleming, both of Louisville, Ky., received patent 2,576,548 for apparatus to make briquettes suitable for ordinary furnaces from the fine coal wastes found in the neighborhood of many coal mines. Patent rights are assigned to Stokett Development Corporation.

The apparatus is mounted on a base of firebrick over a chamber for burning gas or oil to provide heat to aid the process. Steam, compressed air and a liquid binder of bituminous or petroleum types are used to prepare the coal dust for briquetting.

Science News Letter, December 15, 1951

GENERAL SCIENCE

Spread Christmas Spirit

Millions of Christmas trees are transplanted to American homes at Yuletide. Spruce is favorite among evergreens but pine, cedar and firs are also used.

By WATSON DAVIS

See Front Cover

► CHRISTMAS IS a day of many traditions, customs and symbols. It is a religious festival. It is a time for giving gifts and decorating the house in green and red. It is a time for feasting and family gatherings.

To the children of our home and to the spirit of childhood within us all, the Christmas tree, with bright decorations added to its festive green, is an almost universal focus of the holiday. Whether it be a lowly pine or a stately spruce, secured at higher cost, the green tree plays its role in the celebration of an occasion that actually is of an antiquity earlier than the birth of Christ.

One Christmas tree will blossom in America for every five of our population—well over 30,000,000 trees harvested from the forests are sold on the street corners in every city and village, which means there are about two-thirds as many Christmas trees as there are automobiles in the country.

Christmas trees, like many other things which decorate homes at Yuletide, are older than Christmas itself. They were first used in lands far from Bethlehem. They belong to the North, to dark and savage lands beyond the Rhine and the Danube.

The favorite Christmas tree in America is the spruce. There are several types of spruce, but they all can be spotted by their short, sharp, prickly needles, each one standing on a miniature pedestal by itself. Their small cones hang downward.

Shown on the cover of this week's SCIENCE NEWS LETTER is a Christmas-decorated spruce tree. The ornaments on this spruce and on the red cedar and pine on these pages are identical, to give some idea of the relative length of needles.

Then there is the fir, close cousin of the spruce. Firs have softer needles, usually curved, and their cones stand straight up.

Pine trees, often used at Christmas, can be told from spruce or fir by the fact that their needles come in bunches or pairs instead of singly. White pines always have five needles in a bunch. The various yellow pines have less than five—usually two.

Red cedar has very fine, feathery branches of small pointed leaves. *Arborvitae*, a relative of the red cedar, has leaves flattened into tiny scales which completely cover the twigs on which they grow.

Gigantic is the merchandising machine which brings millions of these trees from

mountain forests to city street corners, all within the brief month between Thanksgiving and Christmas Eve.

Yet only in rare instances does this mighty splurge of woodland cutting hurt the forest. If the Christmas tree marketer cuts selectively, his thinning helps the remaining trees to grow, trees which might otherwise have died from crowding.

Many families do not buy a cut tree at all, but instead a small spruce or fir planted in a tub. They use this as a perennial Christmas tree, bringing it indoors each December, sinking the tub in the garden during the remainder of the year. Children and tree grow together, until one day the parlor ceiling is suddenly too low.

At this holiday season when families are together there is a note of tragedy that often enters into the Christmas scene. The hustle of the festivities around the tree inevitably introduces the hazard of fire. To keep disaster from your hearth and home, remember that you can have a safe as well as a Merry Christmas and actually a fresh moist Christmas tree is hard to burn.

So buy a fresh tree and keep it moist. Give the tree a shake before you buy it. See if any needles fall. If there is a shower of needles the tree is dry. When you get the tree home throw water over it, the ex-

perts advise. Then cut off the butt end about an inch slantwise to open the pores for drawing up water. Set the freshly cut end promptly in water, and keep the tree in a cool shady place until it comes indoors for trimming. Replenish water daily, because a 5- or 6-foot tree may take up as much as a cup a day. Be sure it does not block doorways. Secure it against falling.

Check the wiring on the Christmas tree lights, especially the ones left from previous years. A short circuit in worn wiring might set the tree ablaze. If you have many lights don't connect them all in the same circuit. An overloaded circuit may start a fire within the walls of the building.

Choose non-flammable decorations for the tree and consider flame-proof material for Santa's costume and beard.

Avoid confusion, disorder and fire danger by emptying trash promptly as gifts are unwrapped. But don't load so much in the fireplace that it results in a dangerous bonfire.

Buy English Holly

Christmas greens, in addition to the tree, come from the great outdoors to make the home festive and gay. Evergreen boughs can be used for decorations without fear of contributing to the wasteful depredations that are visited upon our woodlands by ruthless holly hunters and unauthorized harvesters of other greens.

It may seem a very innocent thing to do when you buy a holly wreath or a few yards of ground pine for room decoration. But when you do you are usually buying stolen goods and contributing directly to the waste of our forests and our soil.

The American native holly is in most danger of being hunted almost out of existence. The female trees with their red berries particularly fall before the trespasser's axe. In many places in the eastern part of the country, only the male trees without berries are left and their days seem to be numbered.

English holly, with glossy leaves and more plentiful berries than the dull-leaved wild native holly, is being raised commercially for the market. By purchasing it you will help legitimate business and save our wild holly.

Ground pine, the evergreen that grows as a vine, should not be purchased as it is usually stolen and its gathering exposes the soil to erosion.

There are artificial substitutes for holly and ground pine that are bright and attractive and their use does not hurt our forests and wood lots.

The waxy-berried mistletoe that is hung in doorways as a license to kiss the unwary or willing maid caught beneath it is, most appropriately, a parasite. From the stand-



CHRISTMAS PINE—Long needles growing in bunches or pairs help identify this easily-obtained tree.



RED CEDAR—Less well known than the more popular pine and spruce, the red cedar is frequently used for a Christmas tree where it is abundant.

point of conservation, no one worries about the use of mistletoe as a Christmas green. It grows not in the soil but high on the limbs of trees and harvesting it frees the timber tree from the harm that it does. One reason that it is likely to be expensive is that harvesting it is difficult. In the South, where most of the American supply comes from, men knock clumps of it out of trees with charges of buckshot.

The use of trees and greens in connection with the celebration of the midwinter festival that we call Christmas seems to have originated in connection with religious rites and customs which antedated Christianity. Customs similar to these used at our modern Christmas were in existence more than 5,000 years before the birth of Christ. Green boughs were used to decorate houses in the ancient world because trees were worshipped by early peoples. The ancients worshipped the sun and held festivals to honor the sun gods at the time of the winter solstice, the shortest day of the year. The Goths and the Saxons called this midwinter occasion Yule.

At the same time of the year early Egyptians bedecked their homes with sprays of palm trees. Germanic tribes decorated fir trees. The Romans during their feasts to Saturn used boughs of evergreen and laurel. The evergreen fir was revered by both the Greeks and the Scandinavians at their winter rites. Life eternal was symbolized by mistletoe and green boughs in Druid lore. In Norse mythology, the evergreens represented the revival of Balder, their sun god.

Because these usages were linked with religions that the Christians considered pagan, in early England the church opposed the decoration of homes with greens and the hanging of mistletoe in churches. But the origins of these customs were gradually forgotten and the decoration of churches at Christmas became usual.

Some of the Christmas plants are more modern than evergreens. Poinsettia with its bright red bracts, or modified colorful leaves, is a common Christmas flower, which is caused to flower by the short days and long nights of the Christmas season.

Gas, oil and coal central heating has outmoded the open fireplaces of earlier days and with this modernization the custom of the Yule log has almost disappeared. The Druids of old made the burning of the Yule log a ceremony. They appropriated it from the old Vikings who celebrated the Yule festival at winter solstice and dedicated the burning of an oak log to mighty Thor of the hammer, son of Odin. The Norse and Druid rite was adapted to the Christmas holidays in medieval England and once was widely practiced in America.

Toys, gift giving and card sending have assumed increased importance in the modern Christmas and the origins of what we do have been lost in the rush of our present busy life. The tradition of Christmas cards is said to date back only a little over a hundred years.

Science News Letter, December 15, 1951

SURGERY

Keep Patients Alive by Pinching Heart's Aorta

► AN EXTRA aid for keeping alive a patient whose heart stops on the operating table is reported by Dr. Max G. Carter of New Haven, Conn., in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec. 1).

It consists in pinching closed the aorta, big artery that carries blood from the heart. The pinching is done at a level that keeps blood from going to the lower part of the body, so that as much as possible will go to the brain and the heart muscle itself.

This maneuver, in addition to heart massage and other restorative measures, is credited with saving the life and mentality of a patient whose heart stopped beating for 25 minutes.

Science News Letter, December 15, 1951

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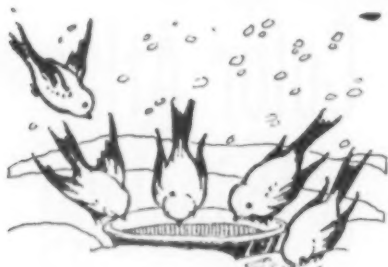
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Bounty for the Birds

► CHRISTMAS GIVING, it is pretty generally agreed, should not be confined to one's kinfolk and closest friends. In times like these, when so many of our unknown neighbors are needy, our bounty must overflow the boundaries of our immediate acquaintanceship.

It may require a little sacrifice to bring a measure of Christmas cheer to our hard-pressed human neighbors, but it costs us practically nothing at all to distribute largesse to our lesser brothers, the winter birds.

They will be glad of the crumbs from the table, of scraps of suet trimmed from a roast before it is put into the oven. A simple pan of water, warmed up to the temperature of good, hot coffee so that it will not freeze so quickly, will be high wassail for them.

Birds will accept your gifts gratefully even if they are only tossed out onto the ground or the crusted surface of frozen snow. It is better, though, to provide some kind of feeding tray, preferably in some corner with shelter from the wind, and as well as possible out of the reach of prowling cats. Food on such a tray will not be wasted through scattering or by burial in loose snow.

Suet is especially prized by birds. It is one of the best of fuel-foods, to keep their small bodies warm against the cold to which they are always exposed, even on relatively good winter days.

This also should be secured in some way to prevent a whole lump from being carried off and monopolized by one greedy individual. Squirrels are fond of suet, too, and will steal the birds' supply if they get a chance.

Many persons make a kind of suet pudding by melting the suet, adding raisins, cracked grain and other things that birds like, and pouring the mixture into a half coconut-shell or some other container to harden. Hung up on a wire, this is difficult for squirrels to get at, and no bird can get more than a fair beakful at a time.

A much simpler suet-holder can be made of an old-fashioned wire soap-dish. This can be hinged against a tree trunk with a couple of staples or bent-over nails, with another bent nail on the other side left free to turn as a latch. Birds are able to peck out the suet through the meshes, but squirrels find the cage completely inaccessible.

Science News Letter, December 15, 1951

NUTRITION

Squeeze Orange Juice For Baby Properly

► SQUEEZE BABY'S orange juice by hand or in a Mixmaster, if you have one. Don't use a mechanical extractor.

This advice seems justified on the basis of a study reported by Drs. C. L. Joslin and J. E. Bradley of the University of Maryland department of pediatrics, Baltimore, in the JOURNAL OF PEDIATRICS (Sept.).

Reason for advising this kind of squeezing is that with these methods less of the oil from the orange peel gets into the juice. And apparently it is the peel oil that causes the skin rash, regurgitation and bowel disturbances some babies get when first started on orange juice.

Orange juice is good for babies and older children and grown-ups because of its vitamin C. Of course, there are other foods and juices that supply this vitamin. The other citrus fruits, tomatoes, cabbage and strawberries are among them. Vitamin C is essential to prevent scurvy. This has been known for a long time.

More recently, scientists have reported that this vitamin is also necessary for utilization of certain amino acetic acids from food, for helping resist infections and for helping the healing of wounds. It is intimately involved in such important body processes as utilization of minerals and calcium.

In the studies by Drs. Joslin and Bradley, the babies were started on their daily orange juice at the beginning of their third week. They got one-fourth of an ounce diluted with an equal amount of water to start. The quantity was gradually increased to four ounces of orange juice at one year. Of course, baby's own doctor is the person to say when and how much orange juice he should get.

Science News Letter, December 15, 1951

TECHNOLOGY

Better Cup of Coffee Promised by New Urn

► A BETTER cup of coffee for G.I. Joe is promised through use of a new coffee urn unveiled.

In the new urn, hot water is sprayed over the coffee grounds, assuring uniform distribution and leaching. The exact amount of water needed is assured for every pound of coffee. The grounds are not suspended in brewed coffee. Result: a good cup of coffee every time.

This quantity brewing device was developed by the Research and Development Division of the Office of the Quartermaster General so that soldiers could get more satisfaction from each cup of coffee. Latin-American coffee growers applaud the new urns because the United States soldier is their largest customer now and they hope to keep him a customer when he returns to civilian life.

The new urn will first be used in Army mess halls here and abroad, later it will be made available for civilian use.

Science News Letter, December 15, 1951

INVENTION

Live Wire Detector Tells of High Voltage

► ELECTRICAL WORKERS servicing apparatus dealing with high voltages will be able to tell if circuits with which they are working contain dangerous currents by means of a simple, improved detector which brought patent 2,575,680 to an English scientist, Herbert Stanley Petch, Edgeware, England. Rights are assigned to Elliot Brothers Limited, of London.

His device consists of a small windowed chamber which contains two liquids that ordinarily can not mix together. It has a pair of electrodes so placed that the production of an electric potential difference between them will cause a visible change in the distribution of the fluid within the chamber. When held near a wire, the device gives instant information whether it is a live line or not.

Science News Letter, December 15, 1951

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GENERAL SCIENCE

Science Aptitude Test

Deadline for taking science aptitude test to compete in Eleventh Annual Science Talent Search approaching. Besides passing tests, entrants must write project report.

► IN HIGH schools over the nation 15,000 seniors have been taking one of the toughest tests of their young careers.

Testing in the Eleventh Annual Science Talent Search, conducted by SCIENCE SERVICE, began on Dec. 10. Only 40 of these 15,000 seniors will hurdle this science aptitude test and the other obstacles of the Search to come to Washington next spring as the top potential scientists in the nation. In Washington they will compete for \$11,000 in Westinghouse Science Scholarships.

The test, designed to measure ability to think and reason along scientific lines, is given in the public, private and parochial schools during a three-hour session. This session can take place any time between Dec. 10 and Dec. 27, last day for entering the Search.

On the basis of past experience it is expected that only about 2,000 of the 15,000 who have requested the opportunity will actually complete all requirements of the competition.

In addition to completing the test, the applicants must write a 1,000-word report on a scientific project of their own choosing. As in the past these range through a host of simple and complex subjects, from a discussion of the tracks of cosmic rays to a description of the fish found in a pond.

In addition to the top 40, who will attend the Science Talent Institute in Washington from February 28 through March 3, another 260 seniors will be given honorable mention and will also be recommended for scholarships in colleges and universities.

All this is part of the annual process of seeking out the high school seniors who show the greatest promise of becoming the outstanding scientists and engineers of the nation in years to come. According to government officials, these will be desperately needed.

The science aptitude test was designed by two psychologists, Dr. Harold A. Edgerton, New York, and Dr. Stuart H. Britt, Chicago. The scholarships will be awarded to the top 40 at the discretion of four judges: the two designers of the test, Dr. Harlow Shapley, director of the Harvard College Observatory, and Dr. Rex Buxton, Washington psychiatrist.

State Science Talent Searches, based on entries in the national Search, will give students a double chance in these 25 states: Arkansas, Connecticut, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas,

Louisiana, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

The Science Talent Search is conducted annually by Science Clubs of America, administered by SCIENCE SERVICE and financed by the Westinghouse Educational Foundation of the Westinghouse Electric Corporation.

Since 1942, 400 boys and girls have come to Washington as winners to participate in the Science Talent Institute. Of these, 40 are already Ph.D.'s, M.D.'s, or D.Sc.'s. A large number have master's degrees. Many are already doing important research work. They are proving that potential science talent can be recognized at high school senior age.

Science News Letter, December 15, 1951

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Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.

CARVED BILLFOLD DESIGNS—Raymond Cherry—*McKnight*, 31 p., illus., paper, \$1.00 Outline designs in actual size, each accompanied by photograph of finished billfold. For use of hobbyists.

THE CLEVER COYOTE—Stanley P. Young and Hartley H. T. Jackson—*Stackpole*, 411 p., illus., \$6.50. History, zoological classification, habits and control of this little wolf that has managed to extend its range despite the merciless warfare of man.

CORALS OF THE DEVONIAN TRAVERSE GROUP OF MICHIGAN: Part IV, *Bilingsstrea*—George M. Ehlers and Erwin C. Stumm—*University of Michigan Press*, 9 p., illus., paper, 50 cents.

CRYSTALLINE ROCKS OF SOUTHWESTERN CALIFORNIA—Esper S. Larsen, Jr., Donald L. Everhart and Richard Merriam—*California Division of Mines*, Bulletin 159, 136 p., illus., \$3.00. These rocks are of great economic importance because of their influence on the deposition of minerals, including gold.

A DECISION METHOD FOR ELEMENTARY ALGEBRA AND GEOMETRY—Alfred Tarski with J. C. C. McKinsey—*University of California Press*, 2d ed. rev., 63 p., paper, \$2.75. "A decision method," writes the author, "must be like a recipe, which tells one what to do at each step so that no intelligence is required to follow it and the method can be applied by anyone so long as he is able to read and follow directions.

THE DILEMMA OF THE PALEONTOLOGIST—E. C. Case—*University of Michigan Press*, 42 p., paper, 75 cents. Showing that much of the work done upon fossils has been based on attempts to apply the laws of neobiology to organisms represented by only a fraction of their anatomy.

EXPERIMENTS IN BIOCHEMISTRY—Max S. Dunn and William Drell—*McGraw-Hill*, 197 p., \$5.00. Laboratory guide and reference book for beginning students.

FIRST SUPPLEMENT, RECEIVING TUBE SUBSTITUTION GUIDE BOOK—H. A. Middleton—*Rider*, J. F., 44 p., paper, 99 cents. Information on how to use tubes you have to replace those no longer available. About 750 new substitutions are listed.

FLOWERING TREES OF THE CARIBBEAN: 30 Paintings—Bernard and Harriet Pertchik—*Rhinehart*, 125 p., illus., \$10.00. The breath-taking beauty of tropic gardens is caught in these fine paintings. Each is accompanied by an informative description.

FRONTIERS IN MEDICINE: The March of Medicine, 1950—*Columbia University Press*, No. XV of The New York Academy of Medicine Lectures to the Laity, 150 p., \$2.50. These popular lectures, some followed by selective bibliographies, discuss psychiatry, old age, genetics, artificial organs, antibiotics, and medical research, giving authoritative information in everyday language.

GEOLOGY OF THE MASSIVE SULFIDE DEPOSITS AT IRON MOUNTAIN, SHASTA COUNTY, CALIFORNIA—A. R. Kinkel, Jr., and J. P. Albers—*California Division of Mines*, 19 p., illus., paper, 75 cents. Based on detailed surface and underground mapping at the Iron Mountain mine. All the ore contains some copper and zinc.

GEOLOGY OF THE SALINE DEPOSITS, BRISTOL DRY LAKE, SAN BERNARDINO COUNTY, CALIFORNIA—Hoyt S. Gale—*California Division of Mines*, 24 p., illus., paper, 35 cents. The substances accumulated in Bristol Basin, deposited by the infrequent storm waters, include: gypsum, salt, calcium chloride and celestite.

HYDRAULIC FILLING IN METAL MINES—William Ewart Lightfoot—*California Division of Mines*, 28 p., illus., paper, 50 cents. Experience has recently proved this to be an important means of reducing mining cost as well as a way of providing support.

INTERNAL CONSTITUTION OF THE EARTH—Beno Gutenberg, Ed.—*Dover*, 2d ed., 439 p., illus., \$6.00. A helpful reference work written by eleven authorities for scientists, engineers and students.

LENSES IN PHOTOGRAPHY: The Practical Guide to Optics for Photographers—Rudolf Kingslake—*Garden City Books*, 246 p., illus., \$2.95. Of interest to professional photographers and serious amateurs.

THE MAKING, SHAPING AND TREATING OF STEEL—J. M. Camp and C. B. Francis—*United States Steel Company*, 6th ed., 1584 p., illus., \$7.50 (\$5.00 to schools and colleges). A comprehensive summary of past and present practices in the iron and steel industry.

MODERN SCIENCE: Book III—H. Webb and M. A. Grigg—*Cambridge*, 188 p., illus., \$1.00. This British elementary science text is planned to give the pupil "a liberal education in the scientific affairs of everyday life" and includes many experiments under the headings, "Finding Direction," "Electricity," and "Biology."

NORTH AMERICAN FIREFLIES OF THE GENUS PHOTURIS—Herbert Spencer Barber—*Smithsonian*, 58 p., paper, 50 cents. The author had almost completely finished the manuscript before his death in 1950, but Frank A. McDermott edited it and added a preface. It is based on observations made in and around Washington, D. C.

ON UNDERSTANDING SCIENCE: An Historical Approach—James B. Conant—*New American Library*, 144 p., illus., paper, 35 cents. To help the layman understand how science affects his daily life. Originally published by Yale University Press.

OSTRACODS OF THE FAMILY HOLLINIDAE FROM THE BELL SHALE OF MICHIGAN—Robert V. Kesling and Gordon W. McMillan—*University of Michigan Press*, 36 p., illus., paper, 75 cents. The report includes three new genera and 15 new species.

PALEONTOLOGY AND MODERN BIOLOGY—David Meredith Scares Watson—*Yale University Press*, 216 p., illus., \$4.00. Fossils promise to contribute to the understanding of evolution by presenting the actual history of the development of some animals. These Silliman Memorial Lectures present actual evolutionary series.

PREFACE TO EUGENICS—Frederick Osborn—*Harper*, rev. ed., 333 p., illus., \$4.00. East and West have different population problems, the author points out. In the East, the problem is one of numbers. In the West it is how to preserve the quality of the people.

PROCEEDINGS: Vol. 60, 1950—Alton A. Lindsey, Ed.—*Indiana Academy of Science*, 350 p., illus., paper, \$3.00. Papers and abstracts presented at the spring meeting.

PROCEEDINGS OF A SECOND SYMPOSIUM ON LARGE-SCALE DIGITAL CALCULATING MACHINERY: Jointly Sponsored by the Navy Department Bureau of Ordnance and Harvard University at the Computation Laboratory 13-16 September 1949—*Harvard University Press*, 393 p., illus., \$8.00. Summarizing recent and current developments.

THE SOVIET SUGAR INDUSTRY AND ITS POSTWAR RESTORATION—Vladimir P. Timoshenko—*Stanford University*, 53 p., paper, 50 cents. Apparently production is not yet back to the pre-war level; attempts at increased mechanization conflict with a system of personal responsibility which formerly helped increase yields of sugar beets.

A SQUINT-EYE VIEW OF AMERICA—No-Yong Park—*Meador Publishing Co.*, 148 p., \$2.50. A scholar of Korean parentage and Manchurian birth gives his humorous Oriental impressions of a land and people about which he is enthusiastic although he is surprised and amused by the American's big feet, tight necktie, and hairy chin.

THINK YOURSELF THIN: The New Mental Outlook to Help You Lose Weight—Thyra Samter Winslow—*Abelard*, 345 p., \$2.50.

TUMACACORI'S YESTERDAYS—Earl Jackson—*Southwestern Monuments Association*, 96 p., illus., paper, 75 cents. Describing the colorful history of a famous old Spanish mission, now a National Monument.

TYPE MORENO FORMATION AND OVERLYING EOCENE STRATA ON THE WEST SIDE OF THE SAN JOAQUIN VALLEY, FRESNO AND MERCED COUNTIES, CALIFORNIA—Max B. Payne—*California Division of Mines*, 29 p., illus., paper, 60 cents. Detailed study of an area which contains a great thickness of well exposed fossiliferous, marine strata of uppermost Cretaceous and Eocene Age.

Science News Letter, December 15, 1951

Lace-making is an important industry in the Philippines.

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PUBLIC HEALTH

Sixth Quarantinable Ill

Relapsing fever added to list of quarantinable diseases. Cholera, bubonic plague, typhus fever, yellow fever and smallpox now included.

► RELAPSING FEVER is being added to the U. S. Public Health Service's list of five quarantinable diseases. These are the diseases for which special quarantine regulations exist to prevent the disease being introduced into the United States.

The five already on the list are: cholera, bubonic plague, typhus fever, yellow fever and smallpox.

Relapsing fever is being added to bring United States quarantine regulations into line with the World Health Organization's sanitary code. Last May WHO included relapsing fever in its list of diseases member nations should watch out for.

The disease is spread by lice. It is not considered a real threat to this country. It is endemic, meaning there are always some cases of it, in North Central Africa. So any ship or plane from there will in future have to go through quarantine before entering a United States port. Passengers, crew and the ship or plane itself will be searched for lice and the crew and passengers will be looked over to see whether any are sick with the disease or may be about to come down with it.

Those who have symptoms or who, without symptoms, have come from the relaps-

ing fever area without proper papers will be held in quarantine for eight days. This is the incubation period of the disease, or time it takes to develop after the germs have entered the patient's body.

Details for working out the regulations were one of the major points under discussion at the yearly meeting, held in Washington, of U. S. Public Health Service officers from 14 major American ports.

To speed entry of oil tankers from the Caribbean islands of Curacao and Aruba, the quarantine officers are also working on a proposal to lift quarantine regulations for such ships. Danger of importation of infectious diseases from these two islands is considered very slight.

Relapsing fever is caused by germs called *Borrelia*. Different members of this germ family cause the disease in different parts of the world. In North Africa the germ is *Borrelia berbera*. The disease begins abruptly with chill, headache, nerve and muscle pains, fever and sometimes vomiting. Five- to seven-day periods of fever alternate with periods of no fever. During the fever periods, the liver and spleen are enlarged.

Science News Letter, December 15, 1951

MEDICINE

X-Ray Treatment for Corns

► CORNS CAN be successfully treated with X-rays, Dr. Sydney J. Hawley of Seattle, Wash., declared at the meeting of the Radiological Society of North America in Chicago.

Treating corns may seem "beneath the dignity" of a serious X-ray specialist, he admitted. But corns, he pointed out, are

"probably second only to the common cold as a source of human misery."

Irradiation will remove the corns, usually in only one treatment. Normal surrounding skin of course must be carefully shielded from the X-rays. The pain of the corn is usually relieved at once. Mild reaction with mild pain may come in two to three weeks. In four to six weeks the corn peels off.

Immediate failures are rare and are more apt to come in old and debilitated patients. "Part of the treatment," Dr. Hawley said, "is to advise that ill-fitting shoes be discarded, but as this advice is seldom followed, it probably can be dispensed with. Even with misfitting footwear, recurrence is rare under a year."

Warts on the hands and feet are another common condition which respond to X-ray treatment.

The use of X-ray treatments for cancer has been emphasized so much in medical reports that many doctors as well as laymen are not familiar with the many uses of

X-rays in non-cancerous and non-fatal conditions, Dr. Hawley stated.

About 30 non-cancerous and non-skin diseases can be successfully treated by X-rays, he said. Among them, besides corns and warts, he listed acne, keloids which are skin tumors that often come in scars, adenoids, bursitis, excessive perspiration, shingles, blood tumors such as strawberry marks, and arthritis. In arthritis, he stated, X-rays often relieve pain for several months, though they are not curative.

Science News Letter, December 15, 1951

INVENTION

Ultrasonic Waves Aid Spray Drying

► SOUND WAVES too high in pitch to be audible to the human ear now may be used in the industrial process known as spray drying to make the process more effective. More thorough and more rapid evaporation is the result.

Inventors are Caperton B. Horsley, Stamford, Conn., and Harold W. Danser, Jr., Belmont, Mass. Patent 2,576,297 was their award. Rights are assigned to Ultrasonic Corporation, Cambridge, Mass.

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❁ **CHRISTMAS BOOT**, to decorate the outside of the front door, is made of red-and-white durable Vinylite plastic and is decked with pine tree cone, holly and five bells that jingle when the door is opened. This stitchless boot, 29 inches long and 11 inches wide, can be hung over the fireplace.

Science News Letter, December 15, 1951

❁ **COIN WRAPPING machine**, an inexpensive device to count and wrap pennies, nickels and dimes, has an open-face tube for each into which they can be quickly stacked on edge until the holder is filled. A hand-operated plunger pushes the stack into the tubular paper wrapper supplied by banks.

Science News Letter, December 15, 1951

❁ **DEEP FAT fryer**, for use on the dining table, resembles the common electric toaster but has an open top for the insertion of the wire basket containing the food to be cooked. Electrically-operated, it has an automatic thermostatic control and a light that turns off when the proper temperature is reached.

Science News Letter, December 15, 1951

❁ **OXYGEN MASKS** for airplane passengers are a low-cost, disposable type thrown away after use by a single person. Made of polyethylene film, they are light in weight, easy to don and comfortable to wear, and can be quickly connected to the plane's oxygen system.

Science News Letter, December 15, 1951

Do You Know?

To keep up America's supply of timber, over 1,000,000 acres of trees have been planted during the past five years.

Alligators in Florida, protected by law since 1944, will be legitimate prey to hunters in 1952 because the number has greatly increased, but only those over eight feet in length can be shot.

Pinworm infection in human beings is found throughout the world and in persons of all ages.

Whenever gasoline is exposed to the air some of the more volatile hydrocarbons contained evaporate into the atmosphere, creating a fire hazard.

The foot contains 26 separate bones.



❁ **PROTECTIVE HAT** for persons with cerebral palsy is lighter and cooler than the football helmets now used to protect heads during falls yet it gives as much protection. It is for both children and adults. Each hat, one of which is shown in the photograph,

is custom-made in the size, color and material desired.

Science News Letter, December 15, 1951

❁ **MAGNIFIER EQUIPPED** with a pair of spring clamps can be snapped onto any standard thermometer and can be moved up and down to magnify a full two-inch section. It enlarges the thermometer section enough so that readings can be taken from a six-foot distance.

Science News Letter, December 15, 1951

❁ **COMPACT WITHIN** which is a flashlight and mirror for illumination can also be used as a safeguard by a pedestrian. This recently patented improved compact, when carried in the hand with switch closed, gives out a red warning light.

Science News Letter, December 15, 1951

❁ **BOTTLE SCRAPER**, for use in the kitchen to get the last morsel of food from tall, narrow-neck bottles, is a long, plastic-handled device with a flexible rubber blade that can be easily slipped through the bottle neck. Its lower end fits into the rounded area at the bottom.

Science News Letter, December 15, 1951

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